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MEMORANDUM

DATE 23 December 1998

TO: David Bennett, WAM, U S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Chlorinated Pesticide Data
Laboratory Batch. K9806374
Site: Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of three sediment samples, laboratory batch K9806374, collected from the Duwamish River has been completed. The samples were analyzed for chlorinated pesticides by Columbia Analytical Services of Kelso, Washington using EPA Method 8081. The samples were numbered:

98384002 98384004 98384008

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994)

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QA Review Batch K9806374 (Chlorinated Pesticides)

Site Duwamish River

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1. Timeliness

All samples were extracted 31 days after sample collection, exceeding the 14 day holding time criteria in the Sampling and Analysis Plan. However, prior to extraction, samples were stored frozen, thus extending the holding time. Samples were extracted within the 12 month holding time recommended by PSEP for frozen samples.

2. GC/ECD Instrument Performance

i) Retention Time Windows

Retention times of all pesticides were within windows calculated from the initial calibration.

ii) DDT/Endrin Breakdown

The percent breakdown for 4,4'-DDT and Endrin was less than 20 percent for each compound and combined breakdown was less than 30 percent on both GC columns.

3. Initial Calibration

a) Individual Standard Mixtures

Retention time windows were calculated correctly.

Appropriate standards concentrations were used and peak heights of 50 to 100 percent of full scale were obtained.

Calibration factor percent relative standard deviation (%RSD) met QC criteria of 20 percent for pesticides and 30 percent for surrogates.

4 Calibration Verification

Instrument blanks and PEM samples were analyzed at the proper frequency

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The difference between actual and calculated concentrations of individual pesticides was within QC criteria of ± 25 percent

5. Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions.

Sample	Compound	QL Goal ($\mu\text{g/Kg}$)	Reported QL ($\mu\text{g/Kg}$)
98384002	gamma-Chlordane	1	3
98384002	Dieldrin	2	4
98384002	DDE	1	4
98384002	Endrin Aldehyde	2	4
98384002	DDT	2	4
98384004	alpha-BHC	1	10
98384004	beta-BHC	1	10
98384004	gamma-BHC (Lindane)	1	10
98384004	Heptachlor	1	10
98384004	Aldrin	1	10
98384004	Heptachlor Epoxide	1	11
98384004	gamma-Chlordane	1	11
98384004	Endosulfan I	1	10
98384004	alpha-Chlordane	1	10
98384004	Endrin	2	10
98384004	Endosulfan II	2	10
98384004	Endrin Aldehyde	2	50
98384004	Endosulfan Sulfate	2	10
98384004	DDT	2	11
98384004	Endrin Ketone	2	10

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Sample	Compound	QL Goal (µg/Kg)	Reported QL (µg/Kg)
98384004	Methoxychlor	1	10
98384004	Toxaphene	10	100

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference.

6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met.

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recovery met quality control criteria (P-project, L-laboratory) for all samples except:

Sample	Compound	Percent Recovery	QC Limits
98384002	Tetrachloro-m-xylene	20	30-150 (P) 20-107 (L)
98384008	Tetrachloro-m-xylene	26	30-150 (P) 20-107 (L)
K981015-MB	Tetrachloro-m-xylene	29	30-150 (P) 20-107 (L)

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The surrogate recoveries for Decachlorobiphenyl in these samples were met both project and laboratory QC limits. No qualifiers were assigned based on Tetrachloro-m-xylene recoveries.

8. Matrix Spike and Matrix Spike Duplicate

No Matrix Spikes or Matrix Spike Duplicates were associated with this SDG.

9. Laboratory Control Sample (LCS)

LCS percent recoveries were outside the QC limits (P-project, L-laboratory) for the following compounds:

Sample	Compound	Percent Recovery	QC Limits
K981015-LCS	gamma-BHC (Lindane)	29	70-130 (P) 21-123 (L)
K981015-LCS	Heptachlor	33	70-130 (P) 31-112 (L)
K981015-LCS	Aldrin	30	70-130 (P) 26-127 (L)
K981015-LCS	Dieldrin	34	70-130 (P) 18-161 (L)
K981015-LCS	Endrin	36	70-130 (P) 32-135 (L)
K981015-LCS	DDT	39	70-130 (P) 30-146 (L)

Results for compounds listed above were qualified as estimated (J). Undetected compounds were also qualified as estimated (UJ).

10. Field Duplicate Analysis

No field duplicate samples were associated with this sample delivery group

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11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc. (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98384002	Aldrin	ND	3.2	NA
98384002	Heptachlor Epoxide	ND	1.7	NA
98384002	Endosulfan I	4.0	ND	NA
98384002	alpha-Chlordane	3.2	ND	NA
98384002	Endosulfan II	8.9	ND	NA
98384002	Endrin Ketone	2.6	ND	NA
98384002	Methoxychlor	5.9	ND	NA
98384004	beta-BHC	ND	93	NA
98384004	DDE	ND	74	NA
98384004	Endosulfan II	ND	164	NA
98384004	Endrin Ketone	30	ND	NA
98384008	DDT	ND	8.9	NA

Differences can arise from analytical interferences on one column. However, the relative percent differences are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte.

12. Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. A duplicate analysis of Batch QC sample K9806404-014 was analyzed, no analytes were detected. No problems were noted in the case narrative.

13. Laboratory Contact

No laboratory contact was required.

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Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

- U - The compound was analyzed for, but was not detected
- UJ - The compound was analyzed for, but was not detected The associated quantitation limit is an estimate because quality control criteria were not met.
- J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard
- R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
- N - Presumptive evidence of presence of material (tentative identification)
- I - Elevated reporting limit due to matrix interference.

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9806374
 Date Collected: 9/14/98
 Date Received: 9/15/98


Organochlorine Pesticides

Sample Name 98384002
 Lab Code K9806374-003
 Test Notes

Units ug/Kg (ppb)
 Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
beta-BHC	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
gamma-BHC (Lindane)	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	UJ
Heptachlor	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	↓
Aldrin	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Heptachlor Epoxide	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
gamma-Chlordane	EPA 3540B	8081A	3	1	10/15/98	11/9/98	ND	UI B
Endosulfan I	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
alpha-Chlordane	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Dieldrin	EPA 3540B	8081A	4	1	10/15/98	11/9/98	ND	UIJ B
4,4'-DDE	EPA 3540B	8081A	4	1	10/15/98	11/9/98	ND	UI B
Endrin	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	UJ
Endosulfan II	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
4,4'-DDD	EPA 3540B	8081A	2	1	10/15/98	11/9/98	6	
Endrin Aldehyde	EPA 3540B	8081A	4	1	10/15/98	11/9/98	ND	UI B
Endosulfan Sulfate	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
4,4'-DDT	EPA 3540B	8081A	4	1	10/15/98	11/9/98	ND	UIJ B
Endrin Ketone	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
Methoxychlor	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Toxaphene	EPA 3540B	8081A	10	1	10/15/98	11/9/98	ND	

B The MRL is elevated because of matrix interferences

Approved By 

Date 11/21/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9806374
 Date Collected: 9/14/98
 Date Received: 9/15/98

Organochlorine Pesticides

Sample Name 98384004
 Lab Code K9806374-005
 Test Notes

Units ug/Kg (ppb)
 Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	UI
beta-BHC	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	
gamma-BHC (Lindane)	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	J
Heptachlor	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	↓
Aldrin	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	
Heptachlor Epoxide	EPA 3540B	8081A	11	10	10/15/98	11/15/98	ND	✓
gamma-Chlordane	EPA 3540B	8081A	11	10	10/15/98	11/15/98	ND	✓
Endosulfan I	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	
alpha-Chlordane	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	↓
Dieldrin	EPA 3540B	8081A	10	10	10/15/98	11/15/98	17	J
4,4'-DDE	EPA 3540B	8081A	10	10	10/15/98	11/15/98	140	
Endrin	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	UI J
Endosulfan II	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	UI
4,4'-DDD	EPA 3540B	8081A	10	10	10/15/98	11/15/98	33	
Endrin Aldehyde	EPA 3540B	8081A	50	10	10/15/98	11/15/98	ND	UI ✓
Endosulfan Sulfate	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	
4,4'-DDT	EPA 3540B	8081A	11	10	10/15/98	11/15/98	ND	J ✓
Endrin Ketone	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	
Methoxychlor	EPA 3540B	8081A	10	10	10/15/98	11/15/98	ND	
Toxaphene	EPA 3540B	8081A	100	10	10/15/98	11/15/98	ND	↓

D

The MRL is elevated because of matrix interferences and because the sample required diluting

Approved By

Date

11/21/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9806374
 Date Collected: 9/14/98
 Date Received: 9/15/98

Organochlorine Pesticides

Sample Name 98384008 Units ug/Kg (ppb)
 Lab Code K9806374-009 Basis Dry
 Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
beta-BHC	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
gamma-BHC (Lindane)	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	uJ
Heptachlor	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	↓
Aldrin	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	↓
Heptachlor Epoxide	EPA 3540B	8081A	1	1	10/15/98	11/9/98	1	
gamma-Chlordane	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Endosulfan I	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
alpha-Chlordane	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Dieldrin	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	uJ
4,4'-DDE	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Endrin	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	uJ
Endosulfan II	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
4,4'-DDD	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
Endrin Aldehyde	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
Endosulfan Sulfate	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
4,4'-DDT	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	uJ
Endrin Ketone	EPA 3540B	8081A	2	1	10/15/98	11/9/98	ND	
Methoxychlor	EPA 3540B	8081A	1	1	10/15/98	11/9/98	ND	
Toxaphene	EPA 3540B	8081A	10	1	10/15/98	11/9/98	ND	

Approved By

Date

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